UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

MAR 12 2014

MEMORANDUM

SUBJECT: Human Health Risk Assessment Work Plan and Screening Level Ecological Risk Assessment for Soil and Groundwater
Former Total Petroleum Refinery
Arkansas City, Kansas
Prepared for MRP Properties Company, LLC
RCRA ID# KSD087418695

FROM: Kelly Schumacher
Toxicologist
ENSV/EAMB

RCRA
529070

TO: Brad Roberts
Project Manager
AWMD/RCAP

As requested, we have reviewed the "Human Health Risk Assessment Work Plan and Screening Level Ecological Risk Assessment for Soil and Groundwater" for the Former Total Petroleum Refinery, located in Arkansas City, Kansas. This document is dated November 22, 2013. Many of the comments, below, could be directly incorporated into the HHRA. However, if may be more effective to schedule a call regarding the final determination of exposure unit boundaries. If you have any questions or need further assistance, please contact me at x7963.

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2. **Section 1.1.5 (p. 1-5) and Figures 1-2 and 1-5.** Exposure Areas are areas in which current or potential future human receptors are equally likely to come into contact over their duration of exposure. For current industrial exposure scenarios, we examine the area in which a worker generally performs his or her duties. For example, workers may be limited to one or two

buildings on a property, along with the surrounding outdoor area. When evaluating potential future scenarios, we also consider geographic features of the land and the presence of existing buildings along with potential future divisions and sales of the property. Defining exposure units is challenging, but it is evident that MRP has considered our previous recommendations in developing Figure 1-5. If desired, we welcome a conference call with all parties to finalize the EU boundaries.

a. **EU size and number of samples.** In Section 1.1.5, MRP communicates that they plan to use land use controls to limit future commercial or industrial properties to approximately 10 acres each, which will be individually sold. Based on this assumption, the entire property is divided into EUs of approximately 10 acres each, as shown in Figure 1-5. This size appears generally acceptable for future exposure scenarios (see below). However, please note that while 8 to 10 samples may be adequate to calculate a representative EPC for a smaller EU, larger EUs may require more samples, particularly if the distribution of contamination across an EU is heterogeneous. The following website contains information on the DQO process, including tools such as Visual Sample Plan that can be used to develop a technically defensible sampling plan (see http://www.epa.gov/quality/dqos.html). We suggest that MRP first identify the numbers and locations of existing samples for each proposed EU, and then determine whether and how many additional samples should be collected as part of the future Data Gap Investigation. Please also consider that additional samples may be required to satisfy other RCRA objectives, such as delineation of the horizontal and vertical extent of contamination around Solid Waste Management Units, Areas of Concern, and hotspots.

b. **EU boundaries.** In portions of the site where work currently does not occur and buildings or structures are not present, the EU boundaries are acceptable. Our remaining concern is for the areas where workers, buildings, and/or structures are currently present. Please identify how workers currently use the site. It may be appropriate to combine all or parts of EUs 1, 2, 3, and 4, in the "asphalt unit." Alternatively, if operations are divided across these EUs, the proposed boundaries may be acceptable. It also seems appropriate to ensure that the building in EUs 5 and 6, along with some surrounding outside area, is located in one EU. Similar considerations should be given to other existing structures or buildings.

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5. **Sections 4.1.2.2 (p. 4-3) and 4.1.2.3 (p. 4-4) and Figure 4-1.** These sections discuss potentially exposed receptors. MRP indicates that potential risks to off-site receptors will not be evaluated due to limited potential for off-site transfer of contamination. We agree that it is unlikely that off-site transport is occurring, and most likely, evaluation of off-site receptors will not be necessary. However, we will rely on characterization of the nature and extent of contamination, which should be completed to determine the boundaries of contamination. If contamination is present off-site (including in sediment and surface water), perhaps as a result of historical practices or activities, it may be necessary to evaluate off-site receptors.

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7. **Section 4.1.2.3 (pp. 4-4 and 4-5).** Where buildings currently exist, the MRP should screen for potential vapor intrusion issues regarding benzene and Total Petroleum Hydrocarbon concentrations in soil and shallow groundwater data. Subslab soil gas, indoor air, and ambient air samples will be required if benzene soil concentrations are $\leq$ 10 mg/kg, Total Petroleum Hydrocarbon concentrations are $\leq$ 250 mg/kg, and there is less than 6 ft between the base of the building structure and the water table. If benzene >10 mg/kg or TPH >250 mg/kg, a distance of 15 feet of clean soil is required to adequately attenuate the petroleum hydrocarbons. Based on shallow groundwater data (at the top of the water table), if benzene is $\leq$ 5,000 µg/L and TPH is $\leq$ 30,000 µg/L, a distance of 6 ft is required for adequate attenuation. If shallow groundwater concentrations are >5,000 µg/L benzene or >30,000 µg/L TPH, a distance of 15 ft is required for adequate attenuation. Otherwise, subslab soil gas samples should be collected to further evaluate the potential for vapor intrusion concerns. Then, if volatile COPC concentrations in subslab soil gas samples present a greater than 1E-05 cancer risk or a non-cancer hazard index of 1, subslab soil gas, indoor air, and ambient air samples will need to be collected to fully evaluate the vapor intrusion pathway.

   For other constituents (e.g., chlorinated solvents), the U.S. Environmental Protection Agency's Vapor Intrusion Screening Level Calculator can be used to determine whether subslab soil gas, indoor air, and ambient air samples should be collected. In this case, the cancer risk should be set at 1×10^{-5}, the non-cancer hazard should be set at an HQ of 1, the site-specific groundwater temperature should be used, and concentrations at the water table should be entered into the calculator.

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   a. Please refer to Comment 1a regarding the appropriate number of soil samples for larger exposure units.

b. For groundwater, we tend to calculate the EPC based on the 95% UCL of the arithmetic mean for those wells located in the center of the plume, where the data has been collected from the aquifer(s) that could be used as a potable water source. That is, shallow overburden would not be used to calculate the drinking water EPC. Use of the single "worst-case scenario" well is acceptable if that data represents potential potable water.

c. For vapor intrusion, only shallow groundwater data should be used, preferably from the top of the water table. For EUs with existing buildings, please refer to Comment 7.

10. **Section 4.2.2.2 (p. 4-9).** This page provides the equations planned to calculate inhalation of indoor air based on groundwater data. The indoor air concentration should not be calculated using the J&E Model. Rather, please use shallow groundwater concentrations (i.e., at or near the top of the water table) along with the default attenuation factor as presented in the EPA's VISL calculator.

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    a. Please be aware that we expect changes to many of these values soon, based on the 2011 Exposure Factors Handbook. The new values are expected to be incorporated into the spring 2014 revision of the EPA's RSL tables.

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CONCURRENCE: Kristina:7665:031114:H:/ENSV/EAMB/RISKASSESSORS/MEMORANDUMS/FY2014/HHRA/KMSMRPPropertiesHHRAWorkPlanandSLERAdated Nov222013-Final.docx				
DIV/BR	ENSV/EAMB	ENSV/EAMB		
NAME	Schumacher	Beringer		
DATE	03/11/14	03/11/14		
INITIALS	MOB for	MOB		

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